WE ALL LIVE IN THE WATERSHED

Teachers: Deanna Peake, Lisa Hartman, Emily Miyano, Roxanne Urry		**Duration: Jan-May 2018 (5 Months)**
Subject/Course: Lower Elementary Life Science/Earth Science	**School: River Montessori Charter School**	**Grade Level: All grade 3**
Collaborating Organizations: **Steelhead in the Classroom, Ellis Creek Water Treatment Facility, Sonoma County Water Agency**		

Standards Met (NGSS, CCSS, or otherwise) Please include full text of standards.	NGSS: 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats. 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. 3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some not at all. 2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area. CCSS: ELA.LiteracyW.3.2. Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. ELA.SpeakingandListening.3.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on other' ideas and expressing their own clearly.
Project Summary (include student role, issue, problem or challenge, action taken, and purpose/beneficiary)	All third level students at River Montessori will meet once a week from January to May. As a whole group through various presentations, experiments, and other activities they will learn about the Petaluma River watershed and watershed geography in general; the nature of water itself and how the water cycle works on our planet; how people use water and water treatment in our area. Once they have some of this background, students will organize themselves into "expert groups" of about 4 students each to research specific aspects of salmon, native birds, and benthic macroinvertebrates completing their life cycles in the watershed. Students will generate written reports of their research which will include their understanding of how these animals are interconnected with each other and the nonliving aspects of their habitats. Each group will choose and organize games, art projects, or other activities to teach the other students at River about their animals in the watershed. Our culminating event will be a Watershed Community Day at River, with all school families and greater community invited to see student displays and enjoy student-led nature walks, scavenger hunts, games and activities. Students will be empowered as the caretakers and teachers right now and in the future of the watershed. The

	overall challenge is for students to help the community understand that all creatures, including humans, are interconnected and we need to care for each other.	
Essential Question Question students will explore throughout the course of the unit.	How do fish, bird, and invertebrate species utilize the various habitats of the watershed geography throughout their life cycles and how do people, who also depend on the watershed, protect and care for it? **Great!**	
Key Learning Objectives and Assessments Concrete objectives for student skill building and comprehension and how these will be measured.	Learning Objective	Assessment
	Students will know the geographical terms of a watershed and understand the water cycle as it operates within a watershed.	On a simple diagram of a watershed, given a word bank, students match names of parts of watershed and stages of water cycle.
	Students will learn basic physical and chemical properties of water and understand that it is essential to all life.	Written conclusions about water demonstrations (experiments) and a paragraph explaining necessity of water to all life on earth.
	Students will learn the life cycle of the steelhead salmon and the importance of each habitat within the river and watershed to that cycle.	Game of Fin Rummy, in which stages of salmon life cycle are matched with habitats needed. Participation in creation of mural of life cycle and river habitats of salmon. Written report (possibly submitted to newspaper).
	Students will identify species of birds in the Petaluma River watershed and how they use the various habitats within it.	Written observations/field notes from and participation in bird watching activity. Diagram or written description of one species life cycle and habitat at each stage. Written report (possibly for submission to newspaper).
	Students will identify macroinvertebrates in the Petaluma wetlands and understand that the presence of some indicate healthy water, while others indicate imbalance.	Written observations, data, sketches, about at least two kinds of macroinvertebrates found in water samples from wetlands. Oral interpretation of data (healthy/unhealthy water and why) given to teacher. Written report (possibly for submission to newspaper).
	Students will give examples from local watershed geography of the interdependence of living and nonliving elements.	Written report, to be submitted to local media for publication.
	Students will learn the source and treatment of the water they use and give examples of conservation and pollution prevention strategies.	Participation in/discussion after water treatment facility field trip and conservation presentation. Poster/calendar page entry for Sonoma County Water Agency Water Awareness Poster Contest.

Orientation	In-Class Visit	Yes! Jan. 2018?	Field Trip to River Heritage Center		Other		If other, describe in timeline how you will meet entry activity requirements
Making Products Public Include how student work will be shared with community members and/or organizations, who students will engage with during/at end of project, and which product(s) will be presented at the Watershed Classroom Student Showcase.	Students will present what they've learned about birdlife, anadramous fish, or benthic macroinvertebrates to each other and all other classes at River Montessori at a special event in the multipurpose room on campus. Each group will set up a display table showing their information in written and graphic form and explain it, as well as lead an activity or game that will help students understand more. Then, at a larger River Montessori community event, students will again present their information at display tables and discuss, and also guide visitors through activities including learning games and observations/scavenger hunts in Schollenberger Park next to school. This event will be open to all school families and community members. In addition, students will share their written research reports about wildlife species in the watershed habitats with local publications (e.g. "Petaluma 360"). A video of these public events along with photos of student work and activities throughout will be shown at the Showcase. Students will also display their written work and projects at a table.						

PROJECT TIMELINE

Please list all activities which are part of the unit in the order they will be implemented. Timeline must include pre and post-assessments, other in-class assessments, an entry activity, at least three outdoor fieldwork activities, a plan for participation in the student showcase, and any other supporting activities and classwork.

Activity	**Type of Activity** (Field Work, In-Class, Presentation, Assessment)	**Description**	**Resources Needed**	**Exact or Approximate Dates**
Name the activity	***Field Work:*** *Any hands-on outdoor lesson or field trips* ***In-Class:*** *Any in-class activity or project* ***Presentation:*** *Any activity during which students share their work with each other or an outside audience* ***Assessment:*** *Any written or oral exams given to assess student understanding and knowledge*	*A thorough outline of the activity.*	*All reading materials, activity materials and equipment, transportation, third party help, or other resources needed to make the activity possible.*	*Please be as specific as possible so that we best know when to reach out with resources and tools to aid in implementation. Exact dates will be emitted from publicly shared version to protect student privacy.*
Orientation (Entry Event)	Hike to Ellis Creek Wetlands and Pre-assessment	Group introduction, discuss observation of living and nonliving things and sketch in nature journal during walk to wetlands. Return to school to share. Take pre-assessment.	Sketch books, colored pencils	January 11
Orientation (continued)	In-class visit from Friends of Petaluma River	Orientation requirements cover background of program, history, definition of watershed, etc.	Friends of the Petaluma River	January 16, 17, 18, or 19, as you are able
Ellis Creek Water Treatment Facilities Tour	Field Trip to facility	Tour led by facility employee/guide. Walk from school to facility and back. Nature journaling.	Ellis Creek facility tour	January 25

Work of Water	In class demonstrations/experiments	Properties of water, chemical make-up, water cycle. Assessment is written paragraph about water as essential to life, citing information from demonstrations.	Simple science equipment at River (containers, pitchers, straws, water supply, etc.), science journals, assessment worksheet (diagram to label/word bank)	February 1
Bird Watching	Hike to Schollenberger Park	Introduction given previously in class to specific species and signs to look for on hike, walk from school to park, sketch in nature journal and take field notes re: weather conditions, water, time of day, etc.	Petaluma Wetlands Alliance (tour?)	February 8 (tba)
Bird Assessment and Fish Introduction	In class assessment of bird life cycle/species and salmon life cycle project introduction	After bird assessment, create mural showing parts of watershed and associated stage of life cycle for salmon. Set up aquarium to simulate habitat needs for salmon eggs	Steelhead in the Classroom equipment already owned by River, permit (process begun)	February 15
Water Testing	Walk to Ellis Creek	Walk to specific location on Ellis Creek (identified last year for Watershed map). Nature journaling/field notes. Use water testing kits to determine water quality. In class record results together as a group.	Water Testing kits from Friends of Petaluma River	February 22
Water Conservation Poster Project	In class project to be used as assessment	Brainstorm conservation ideas and create individual posters to be submitted for SCWA contest	Sonoma County Water Agency poster contest supplies, free conservation messaging (stickers, pencils, workbooks, etc.)	March 1
Warm Springs Hatchery Field Trip	Field Trip to tour hatchery and pick up steel head salmon eggs	Tour led by hatchery guides, ranger; we will be receiving 60 salmon eggs to transport back to classroom to prepared aquarium environment	Warm Springs Hatchery, Lake Sonoma, Bus transportation	March 7

Watershed Community Day	Community event at River campus, next to Ellis Creek and Schollenberger Park entrance	Students share research at displays, discuss with visitors and lead activities, games, nature walks into Schollenberger	Reports and projects fromm previous activities, video camera	April 13
Closure/Post Assessment	Post Assessment	Final group circle to close and give post assessment	Post assessment from website	May 3

Please add more rows if needed. (Right click in last box, "Insert Row Below")

Other Notes: **This is a perfect proposal! It is clear you put a lot of time and thought into this curriculum. We love the joyous, celebratory tone!**